

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

# PCT

To:

see form PCT/ISA/220

## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/JP2005/009006

International filing date (day/month/year)  
11.05.2005

Priority date (day/month/year)  
28.05.2004

International Patent Classification (IPC) or both national classification and IPC  
F04B39/02, F04B39/00

Applicant  
MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.

### 1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

### 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

### 3. For further details, see notes to Form PCT/ISA/220.

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**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

10/553847  
JC09 Rec'd PCT/PTO 20 OCT 2005  
International application No.  
PCT/JP2005/009006

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**Box No. I Basis of the opinion**

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1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - ☐ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material:
    - ☐ in written format
    - ☐ in computer readable form
  - c. time of filing/furnishing:
    - ☐ contained in the international application as filed.
    - ☐ filed together with the international application in computer readable form.
    - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

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**Box No. II Priority**

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1. ☒ The validity of the priority claim has not been considered because the International Searching Authority does not have in its possession a copy of the earlier application whose priority has been claimed or, where required, a translation of that earlier application. This opinion has nevertheless been established on the assumption that the relevant date (Rules 43*bis*.1 and 64.1) is the claimed priority date.
2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.
3. Additional observations, if necessary:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/JP2005/009006

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**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	4,9-11
	No: Claims	1-3,5-7
Inventive step (IS)	Yes: Claims	4,9-11
	No: Claims	1-3,5-7
Industrial applicability (IA)	Yes: Claims	1-11
	No: Claims	

2. Citations and explanations

**see separate sheet**

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**Box No. VII Certain defects in the international application**

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The following defects in the form or contents of the international application have been noted:

**see separate sheet**

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**Box No. VIII Certain observations on the international application**

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The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

**Cited Documents**

1. The following documents indicated in the international search report are referred to in this international preliminary examination report:

D1 : PATENT ABSTRACTS OF JAPAN vol. 2003, no. 12, 5 December 2003 (2003-12-05) & JP 2004 027969 A (MATSUSHITA REFRIG CO LTD), 29 January 2004 (2004-01-29)

Do : US 2003/223891

Do : US-A-5 860 395

**Re Item V**

**Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

2. As far as claim 1 can be understood (see item VIII below), the following comments about the claims can be made:

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.

The document **D1** discloses a hermetic compressor comprising a housing 1 which contains oil and houses a compression mechanism 6 for compressing a refrigerant gas, the compression mechanism 6 comprising a crankshaft 13 disposed in a vertical direction and having a main shaft 11 and an eccentric shaft 11; a block forming a cylinder 17 a piston 20 reciprocating in the cylinder 17 in a direction of a cylinder axis, a piston pin 122 disposed on the piston in a way in which a center axis is in parallel to the eccentric shaft 12; a connecting rod 21 for connecting the eccentric shaft 12 to the piston pin 122; and an oil supplying structure 14 for supplying the oil to an outer circumferential surface of the piston 20; wherein the piston 20 has an under cut (area around 12) on the outer circumferential surface and communicates with space inside the housing 1 at least when the piston 20 is in a bottom dead center (cf Figures 2-8).

Thus, the subject-matter of claim 1 is not novel (Article 33(2) PCT).

3. The subject-matter of dependent claims 2,3 and 5-7 do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT with respect to novelty and inventive step, in the light of the disclosure in document D1-Do.
4. Document D1, which is considered to represent the most relevant state of the art, discloses a hermetic compressor from which the subject-matter of claim 9 differs in that an axially formed land is provided at a predetermined width on a outer circumferential surface of the piston and is continuously formed to the skirt surface.

The technical problem solved by this distinguishing feature could be determined as to promote the oil supply and sealing property to the piston thus improving the lubrication of the compressor.

The solution as defined by the combination of features in claim 9 appears to be not known from document D1 or from any of the documents cited in the international search report and does not appear to be rendered obvious by any of these documents alone or in combination, and is not considered a matter of normal design procedure.

The subject-matter of claim 9 is therefore new (Article 33(2) PCT).

#### **Re Item VII**

#### **Certain defects in the international application**

5. a)The Independent claims are not in the two-part form in accordance with Rule 6.3(b) PCT with those features known in combination from the prior art D1 being placed in the preamble (Rule 6.3(b)(i) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).
- b)The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
- c)Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art

disclosed in the documents D1- Do are not mentioned in the description, nor are these documents identified therein.

**Re Item VIII**

**Certain observations on the international application**

- 6.1 The subject-matter of claim 1 lacks clarity due to the use in the last paragraph of the expression "...the piston has an under cut...excluding a sliding surface existing in a parallel direction and a perpendicular direction of the piston pin viewed from an axial direction of the piston..." such a statement would not give logical sense to the paragraph, as a "sliding surface" of the piston does not exist "in the in a parallel direction and a perpendicular direction of the piston pin" in the sense that an open hole is placed above and below the piston pin, however in order to overcome this objection it could be said "the piston has a under cut...formed outside a region with a predetermined width in a parallel and perpendicular direction with respect to the axis of the piston pin" (support for this can be found in the description page 6 lines 13-16 and figure 4) (Article 6 PCT).
- 6.2 Furthermore unclarity also arises in the last part of the paragraph with the expression "...the under cut separated from a top surface at a cylinder side of the piston..." this expression is ambiguous as the reference to the top surface is not clearly stated, it is already known "...the piston has an under cut on the outer circumferential surface...", a possibility of overcoming this objection would be to say "...the undercut is separated from a end surface of the piston, along the outer circumferential surface ..." (support for this can be found in the description page 6 lines 9-10 and figure 3)(Article 6 PCT).